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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,718

09/05/2006

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EXAMINER

JOHNSON, CONNIE P

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

01/07/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,718	Applicant(s) ISHIDUKA ET AL.	
	Examiner CONNIE P. JOHNSON	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The remarks and amendment filed 10/13/2009 has been entered and fully considered.
2. Claims 1 and 4-24 are presented.
3. Claims 1, 5, 9, 16 and 20 are amended.
4. Claim 2 is cancelled per applicants' request.
5. The objection to claims 9 and 20 is withdrawn.
6. The 112, 2nd paragraph rejection is withdrawn.

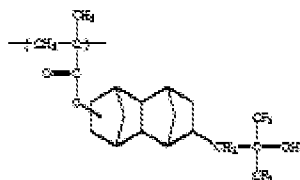
Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

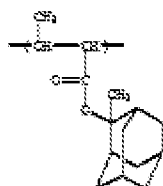
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 4-12 and 15-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanna et al., U.S. Patent Publication No. 2004/0009430 A1.

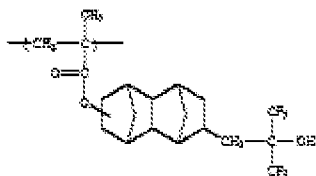
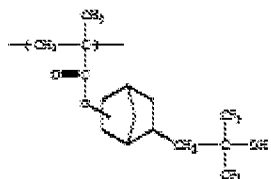
Kanna teaches a positive resist composition comprising a resin with a recurring group that decomposes by action of an acid to become soluble in alkali developer (page 2, [0018]). The recurring unit comprises divalent and trivalent cyclic groups (a1) (page 21). Examples of the (a1) groups are shown below:



Recurring units that meet the limitations of (a2) are on page 36 of the reference:



Recurring unit (a3) comprises the following unit on page 37:



The positive resist composition also comprises a photoacid generator (page 49, [0342]).

The recurring units (a1) and (a2) are each present in an amount of 5 to 80mol% (page 12, [0165-0166]) (instant claim 1). The combination of recurring units (a1), (a2) and (a3) is not exemplified in the reference. However, it would have been obvious to one of

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ordinary skill in the art to combine the recurring units because Kanna teaches recurring units combined in any combination as shown increases solubility of the resin in an alkali developer, has less line edge roughness and less development time (page 1, [0013]).

9. Claims 13, 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanna et al., U.S. Patent Publication No. 2004/0009430 A1 (above) in view of Endo et al., U.S. Patent Publication No. 2004/0259040 A1.

Kanna teaches a positive resist composition comprising a resin with a recurring group that decomposes by action of an acid to become soluble in alkali developer as relied upon above (page 2, [0018]). Kanna teaches a method of forming a positive resist composition. However, Kanna does not teach a method of immersion exposure.

Endo teaches an immersion exposure method comprising supplying water as the immersion liquid onto a resist film, exposing through the immersion liquid, baking and developing the resist film (page 58, [0058-0059]). It would have been obvious to one of ordinary skill in the art to use immersion exposure in the composition of Kanna because immersion exposure is well known to improve resolution and refine patterns at conventional exposure wavelengths (page 1, [0003-0004]).

Response to Arguments

10. Applicant's arguments filed 10/13/2009 have been fully considered but they are not persuasive.

11. Applicant argues that Kanna does not teach a positive resist composition for liquid immersion lithography.

Applicant does not claim an immersion exposure method in claim 1. The recitation, "A positive-type resist composition for liquid immersion lithography" is

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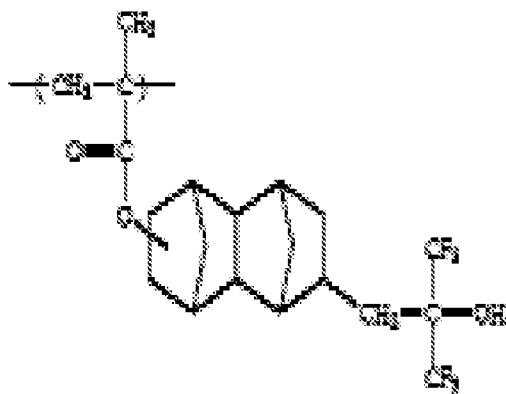
intended use and therefore does not add patentable weight to the claim. Applicant is reminded of MPEP 2106 with regards to intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

In addition, Kanna teaches the methacrylic ester and acrylic ester recurring units in amounts of 5 to 80mol% as claimed (page 12, [0165-0166]).

12. Applicant argues that Kanna does not teach an acrylic ester unit (a1) of the present invention.

Applicant is directed to page 21, wherein Kanna teaches an acrylic ester repeating unit as follows:

The recurring unit comprises divalent and trivalent cyclic groups (a1) (page 21). Examples of the (a1) groups are shown below:



. Repeating unit F-35 on page 21

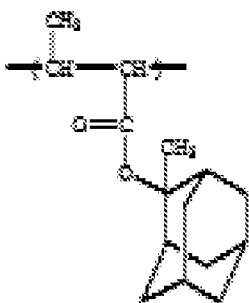
meets the limitations of constitutional unit (a1) of instant claim 1, when X is a divalent

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cyclic group and Y is a divalent linking group, CH₂. Therefore, Kanna teaches repeating unit (a1). The repeating unit shown in the rejection is F-35, not F-39.

13. Applicant argues that B-8' on page 36 does not meet the limitation of acrylic ester unit (a1).

The rejection over Kanna does not reference any structure on page 36 as representing acrylic ester unit (a1). The rejection clearly states that the repeating unit on page 36 is representative of (a2) in instant claim 1:



. There is no reference in the rejection over

Kanna to specific formula (B-8') on page 36.

14. Applicant argues that Kanna, although teaching the acrylic ester units, discloses a broad range of repeating units and that choosing a specific repeating unit with a group that has general formula (Z) would not have been obviously anticipated by one of ordinary skill.

Kanna teaches a finite group of repeating unit structures representing (a1), (a2) and (a3) that are comprised in the resist composition. One of ordinary skill would choose the repeating units as claimed because Kanna teaches any of the groups from (a1), (a2) and (a3) would combine to form a polymer that is capable of enhancing performance properties of the resist composition, absent any evidence to the contrary (page 12,

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[0164-0166]). In addition, Kanna teaches the specific amounts as claimed, 5 to 80mol% of the recurring units. Although Kanna may not teach an immersion exposure procedure, one of ordinary skill would have been directed to use immersion exposure to improve pattern formation and resolution.

15. Applicant argues that Kanna does not teach immersion lithography as the exposure method.

Applicant does not claim an immersion exposure method in claim 1. The recitation, “A positive-type resist composition for liquid immersion lithography” is intended use and therefore does not add patentable weight to the claim. Applicant is reminded of MPEP 2106 with regards to intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

16. Applicant argues that Kanna teaches repeating units in a broad range and that it would not have been easy to select from among the broad range a combination of repeating units for constituting a resin suitable for a resist composition for immersion lithography.

Kanna teaches a finite group of repeating unit structures representing (a1), (a2) and (a3) that are comprised in the resist composition. It would have been obvious to choose the repeating units as claimed because Kanna teaches any of the groups from (a1), (a2) and (a3) would combine to form a polymer that is capable of enhancing performance properties of the resist composition, absent any evidence to the contrary (page 12, [0164-0166]). In addition, Kanna teaches the specific amounts as claimed, 5 to 80mol%

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of the recurring units. Although Kanna may not teach an immersion exposure procedure, one of ordinary skill would have been directed to use immersion exposure to improve pattern formation and resolution.

17. Applicant argues that although Kanna teaches methacrylic ester and acrylic esters as recurring units in the resist composition, Kanna does not teach using both units in a specific amount or the effects of using the specific amounts thereof.

Kanna teaches the methacrylic esters and acrylic esters in specific amounts as claimed, 5 to 80mol% of the recurring units in the resist. The repeating units of the polymer taught by Kanna meet the limitations of the resin component of the resist composition.

Although Kanna may not point to the same benefits of the repeating units in the polymer, Kanna teaches performance improvements of the resist based on the repeating units in the resist polymer (page 12, [0164-0166]). The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

18. Applicant argues that co-use of repeating units (a1) and (a2) constituting a resin suitable for immersion lithography to obtain the desired effects could not have been conceived easily by one of ordinary skill in the art in view of Kanna and Endo.

Endo is not relied upon for acrylic ester repeating units (a1) and (a2). Endo teaches immersion lithography for positive resist compositions. Kanna teaches both repeating units (a1) and (a2). Further the use of the resin or repeating unit is not claimed.

19. The 103(a) rejection over Kanna et al. in view of Kawashima et al. has been withdrawn. Therefore, the arguments over Kawashima are moot.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Connie P. Johnson/
Examiner, Art Unit 1795

/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1795